ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)

ORGANISATION OF ISLAMIC COOPERATION (OIC)

Department of Computer Science and Engineering (CSE)

(27)

SEMESTER FINAL EXAMINATION
DURATION: 3 HOURS

SUMMER SEMESTER, 2022-2023
FULL MARKS: 150

CSE 4643: Mobile Application Development

Programmable calculators are not allowed. Do not write anything on the question paper.
Answer **all 6 (six)** questions. Figures in the right margin indicate full marks of questions with corresponding COs and POs in parentheses.

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1. a) Security has always been a major concern for businesses, which is even greater when it comes to mobile apps. That's why Kinetic Solution, a software farm contacted you, a prominent Application Security Administrator to suggest a robust security checklist that can be followed to find common bugs and handle basic security breaches. — 15 (CO4) (PO2)

   Recommend a generalized security checklist to them.

   b) You are a new member of Google's Bug Hunting Community. Generally, you need to follow three steps to find out bugs: explore resources, report security, and at last collect your bugs as digital trophies and earn paid rewards. You have already covered resources about Android content providers, Android intent, and Android permission. Assume, a malicious application has no permission to access mobile storage and a good application returns Android intent if it can not parse it. Both of the applications use Android content providers. — 10 (CO4) (PO2)

   Report a step-by-step approach with a diagram of a vulnerability to the Google's Bug Hunting Community.

2. a) IUTroomBooking, an app made by some students, was launched today. You can sign in and book some rooms as a class representative or a faculty member. First, you need to provide your IUT mail and password. Then you need to confirm the credentials again and if it matches, you will be signed in. After signing in you get to see the UI. All the labels are horizontally aligned. You need to find the room number in a search bar and then click on the button to confirm the booking. After all these, everyone using the app will get to see your credentials inside your booked room. — 10 (CO3) (PO2)

   Find two anti-patterns in the above scenario and provide their solutions.

   b) ILHAM has the idea of showing every bit of information about a futsal tournament. All the information will be available after the match, like the number of goals, passes, misses, crosses, substitutes, and so on. Now he chooses to use a table-like design pattern to show all the data. The columns contain information regarding the number of goals, passes, substitutes, etc. ILHAM made a prototype and found that users need to scroll sideways (right to left) to see all the columns. The problem is that users most of the time forget which row represents which team. Propose a solution with an appropriate tabular mobile design pattern. — 5 (CO4) (PO2)

   c) While building an app, its common to render a `ScrollView` but see nothing on the screen. Describe two common debugging techniques to solve this issue. — 8 (CO2) (PO1)

   d) Discuss both the challenge and opportunity of displaying tabular data in mobile applications. — 2 (CO1) (PO1)

3. a) Replace the placeholders (#placeholderX where X can be 1 to 8) with proper keywords of react native so that the Code Snippet 1 will render the Figure 1. 1 (CO2, (PO1)

```
import {Image, StyleSheet, View, #placeholder1} from 'react-native'
import PropTypes from 'prop-types'
import {#placeholder2} from 'react'

import AuthorRow from './AuthorRow'

const Card = ({fullname, image, linkText, onPressLinkText}) => {

  const [loading,#placeholder3] = useState(#placeholder4)

  const handleLoad = () => {
    setLoading(false)
  }
  return (
    <View>
      <AuthorRow
        fullname={fullname}
        linkText={linkText}
        onPressLinkText={onPressLinkText}
      />
      <View style={styles.image}>
        {#placeholder5 && (
          <ActivityIndicator
            style={StyleSheet.absoluteFill}
            size={'large'}
          />
        )}
        <#placeholder6
          style={StyleSheet.absoluteFill}
          source={image}
          onLoad={handleLoad}
        />
      </View>
    </View>
  )
}
#placeholder7 default Card

const styles = StyleSheet.#placeholder8({
  image:{
    aspectRatio:1,
    backgroundColor:'rgba(0,0,0,0.02)'
  }
})
```

Code Snippet 1: A JavaScript code for Question 3.a

Figure 1: An image of a custom card component Question 3.a

4.5×2

b) State the differences between,

i. Static and Dynamic style. (CO1) (PO1)

ii. Stock and Jailbroken devices.

4. a) Mention the output to the console log of the Code Snippet 2. 5 (CO2) (PO1)

```
1 const obj = {fname:'atiq',lname:'shafin',age:18}
2 let txt = ""
3 for(let x in obj){
4     txt += obj[x]
5 }
6 console.log(txt);
```

Code Snippet 2: A JavaScript code for Question 4.a

b) Beginners and experts alike frequently run into the problem where a component does not render anything on the screen. State a debugging technique to solve this issue. 5 (CO2) (PO1)

c) Shafin, a newbie in software development is trying to build a touchable opacity with multiple children as element. He tries several times, only to get errors. Suggest to him a correct way to include multiple children inside a touchable opacity. 5 (CO2) (PO1)

d) Assume, a `View` has a child component with `1717×122(width×height)` dimension and the style object as its style prop, shown in the Code Snippet 4. Find the actual height and width of the `View`. 5 (CO1) (PO1)

```
1 {
2     marginTop : 22,
3     marginBottom : 40,
4     padding : 13,
5     borderTop : 18,
6     paddingRight : 73,
7     border : 15,
8     margin : 50
9 }
```

Code Snippet 3: A JavaScript code for Question 4.d

e) Demonstrate two approaches to include images in a mobile application with appropriate code examples. 5 (CO1) (PO1)

5. a) On the Web, Multi-Step registration processes often use process bars to show users where they are and whats next. Discuss the problem faced by mobile application designers when they want to do the same and its solution with illustrations for both the problem and the solution. 15 (CO4) (PO2)

b) GiftApp, a new start-up selling gifts for different occasions like birthdays, anniversaries, etc., decided to launch their first ever mobile application. The executives want to have a visible sign-in option even when users just roaming around the application. Suggest a sign-in option for GiftApp with necessary illustrations. 5 + 5 (CO4) (PO2)

6. a) Describe two HTML events. 5 (CO1) (PO1)

b) Mention the outputs to the console log of the Code Snippet 4. 6 (CO2) (PO1)

```
1 let x = 5
2 let y = '5'
3 let z = '6'
4 console.log(y<z)
5 console.log(x==y)
6 console.log(x===y)
```

Code Snippet 4: A JavaScript code for Question 6.b

c) Suggest the seven-step process for developing any mobile application. Provide examples for each of the steps. 14 (CO1) (PO1)